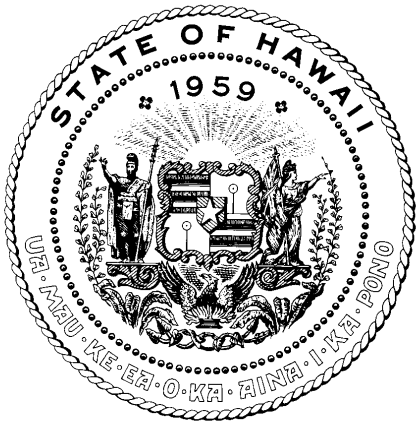
Report to the Twenty First Legislature
State of Hawaii
2002 Regular Session

Implementation of Chapter 190D, Hawaii Revised Statutes (as amended), Ocean and Submerged Lands Leasing



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1.0 Introduction

Act 176, Session Laws (SLH) 1999, was enacted on July 1, 1999, allowing potential utilization of Hawaii's ocean resources for research and sustainable development of open ocean aquaculture. Specifically the Act amended an existing law, Chapter 190D, Hawaii Revised Statutes (HRS), Ocean and Submerged Lands Leasing, and effected many important changes including:

- Permit commercial mariculture projects under Chapter 190D, HRS;

- Remove size restrictions on mariculture leases;

- Define the water surface, water column and submerged lands beneath them as one economic unit for purposes of this chapter and calculating lease rent;

- Allow processing of ocean leases under Chapter 190D, HRS, without prior authorization of the Legislature by concurrent resolution;

- Permit each lease to describe the degree of exclusive use or access to the site by the public; and

- Require the amendments made to Chapter 190D, be repealed five years after the effective date of the Act, unless the Legislature authorizes an extension.

In effect, the Legislature has provided a five-year “window” to develop and test a trial process to lease ocean space around the Islands to an unspecified number of aquaculture projects. This approach will allow Hawaii to gain direct environmental and economic experience with leasing the ocean for commercial aquaculture, while providing close oversight by the Legislature of these developments.

The law also requires the Department of Land and Natural Resources (DLNR), in cooperation with the Department of Agriculture (DOA), to submit a progress report to the Legislature on the implementation of the amended law prior to each regular session. This Report, the third in the series, addresses the progress with implementing ocean leasing, as well as, highlights of related national and local research and development initiatives in 2001.

2.0 National Activities and Hawaii Participation

In 1999, the U.S. Department of Commerce (DOC) established a bold long-term vision for the U.S. marine aquaculture industry. Ambitious objectives to be met by 2025 included:

a. Increase the value of domestic aquaculture production from the present $900 million annually to $5 billion;

b. Increase the number of jobs in aquaculture from the present estimate of 180,000 to 600,000;

c. Develop aquaculture technologies and methods both to improve production and safeguard the environment, emphasizing where possible those technologies that employ pollution prevention;

d. Double the value of non-food products and services produced by aquaculture in order to increase industry diversification;

e. Enhance depleted wild fish stocks through aquaculture, thereby increasing the value of both commercial and recreational landings; and

f. Increase exports of U.S. aquaculture goods and services from the present value of $500 million annually to $2.5 billion (U.S. DOC, 1999).

Hawaii, with its abundant marine resources, is striving to play a key role in the implementation of this new national policy for marine aquaculture (Table 1). In 1999 and 2000, a collaboration of private, State and University parties demonstrated the economic and environmental feasibility of offshore cage culture in Hawaiian waters. The federally funded Hawaii Offshore Aquaculture Research Project (HOARP) produced and sold 115,148 pounds of the popular local fish,

moi or Pacific threadfin, from a cage for the first time operated totally submerged (Sea Technology, 2001).

Table 1: Hawaii's Marine Resources

Island Chain	-	1,500 miles long
Coastline	-	746 miles
State Marine Waters	-	2.8 million acres
Federal Marine Waters	-	565 million acres

The State growth strategy for open ocean aquaculture has focused on developing a critical mass of research and development activities to further demonstrate the long-term sustainability of moving the aquaculture industry offshore. Several important projects begun in 2001 are highlighted below.

2.1 Leasing Federal Marine Waters

In late 1999 and 2000, the Center for the Study of Marine Policy, University of Delaware completed a collaborative, multi-disciplinary study to develop a policy framework for governing marine aquaculture in Federal waters off the coast of the United States. The intent of the work was to support ongoing and future

policy initiatives within the Federal government with respect to offshore aquaculture; leading eventually to development of a general policy for U.S. management of all resources in the Exclusive Economic Zone (EEZ). The Manager of DOA's Hawaii Aquaculture Development Program (ADP) was asked to serve on the Advisory Committee and share Hawaii's recent experiences with offshore aquaculture development.

The report to the Congress, titled "Development of a Policy Framework for Offshore Marine Aquaculture in the 3-200 Mile U.S. Ocean Zone" included 15 recommendations covering: planning, permitting, environmental reviews and public participation, leasing, administering agency, operations and monitoring and abandonment of facilities (Cicin-Sain et al., 2001). These were:

- Legislation should be developed to provide an overall plan for the mapping, management, development, and conservation of the U.S. EEZ.

- In the interim, through executive action, there should be an explicit mandate to National Oceanic and Atmospheric Administration (NOAA) and Department of the Interior (DOI) to develop assessments of EEZ areas suitable for various uses (including aquaculture) through mapping and analysis.

- A joint federal/state permitting process for offshore marine aquaculture should be established under the coordination and leadership of the U.S. Army Corps of Engineers in consultation with the (new) NOAA Office of Offshore Aquaculture (OOA), first through executive action using an inter-agency memorandum of understanding, and ultimately in new congressional legislation on offshore marine aquaculture.

- The joint federal/state permitting process should involve the use of one comprehensive application form and procedure to meet the application requirements of all agencies involved that would involve the submission of a proposed operational plan.

- Reviews of offshore marine aquaculture projects should employ the precautionary approach, adhere to the environmental review requirements of the National Environmental Policy Act, and consider mitigation measures to address adverse impacts on other ocean uses.

- A set of special standards related to the impact of offshore aquaculture operations on the natural and human environments should be taken into account in the environmental review process.

- In general, an environmental assessment should be performed as part of the leasing process, and Environmental Impact Statements should be

prepared for individual projects. The extent of the review process should reflect the risks associated with the project under consideration.

- The leasing, permitting, and environmental review processes should be conducted in an open and transparent manner with opportunities for participation by the public and by affected interests.

- Leases (short-term or long-term) giving the aquaculturist exclusive rights to occupy the site and exclusive rights to the cultured organisms should be developed. Such leases should be guided by a set of principles relevant to public trust responsibilities and should specify the scope, size, duration, and other terms of the lease.

- The degree of exclusivity should be negotiable, and some form of compensation to the public for the exclusive rights granted.

- Rents collected should be used to establish a special fund to support offshore aquaculture management and to provide revenue sharing to states for potential impact mitigation.

- There should be a new NOAA OOA created to facilitate the development of offshore marine aquaculture. Its primary mission would be to oversee and implement the leasing, environmental review, and subsequent

monitoring of offshore aquaculture, including the eventual abandonment of offshore aquaculture facilities (the permitting process is an inter-agency process led by the Army Corps of Engineers).

- Monitoring should be done by the aquaculture business, with periodic verification by the new NOAA OOA.

- In addition to establishing a monitoring program, procedures should also be developed for ensuring and reporting enforcement of permit/lease conditions, including legal penalties for non-compliance. This may include a permit bond.

- All projects should be required to post a performance bond prior to placing structures or equipment in public waters as a form of insurance that such structures and equipment will be properly removed from the site upon the termination of the marine aquaculture operation and the site returned to a state substantially similar to what it was before the operations began.

As a result of the successful policy study, a follow-on proposal was made by the University of Delaware to the National Sea Grant Office entitled, “Development and Testing of an Operational Framework for Offshore Aquaculture in Conjunction with Stakeholders at National and Regional Levels” and was funded for two years at $488,000. The ADP Manager was asked to be a member of the

multi-disciplinary, multi-regional team to carry out the study. The team will develop operational guidelines for implementation of a policy framework reflecting input from federal agencies, coastal states, and stakeholder groups, then test and tailor the operational framework in three regions currently involved in offshore aquaculture: New England, the Gulf of Mexico and Hawaii and the Pacific.

2.2 National Marine Initiative, National Sea Grant Program

The National Sea Grant Program in 1999 established a special research initiative in marine aquaculture. The initiative strives to fund innovative research, policy, and regulatory analysis and development, and outreach and demonstration for the development of marine aquaculture in the United States. Approximately $5M a year is being made available for this initiative and open ocean aquaculture is a priority target for the program. The overall purpose of the effort is to develop a highly competitive, sustainable marine industry that will meet growing consumer demand for aquatic foods and products. Continuation of this important initiative to Hawaii depends on the U.S. Congress maintaining support.

This National Sea Grant initiative funded the highly successful HOARP effort (Ostrowski et al., 2001). During the current funding cycle, Hawaii interests again received a portion of the available funds.

A joint research project between the Oceanic Institute and University of Hawaii received $800,000 to examine the regulatory framework and conditions for offshore cage culture in Hawaii in order to define constraints associated with the impact of cage culture on water quality, particularly Zone of Mixing (ZOM) regulations for cage effluents. ZOM is a regulatory approach that defines an area of ocean where water quality standards can be exceeded, thus allowing dilution of effluents (Bay 1995). Specifically, this work proposes to utilize the commercial project being developed by Cates International, Inc. to carry out the following: 1) Develop a computer model to determine the size and shape of the regulatory mixing zone for cage effluents; 2) Conduct water quality and organic loading surveys to collect data to develop and test the ZOM model; and 3) Collect oceanographic surveys to provide data to develop and test the ZOM model. In addition, additional research will be carried out by the Oceanic Institute on hatchery techniques for other economically important Hawaiian species.

2.3 Determining Suitable Open Ocean Aquaculture Sites

Dr. Leonard Young of ADP and Dr. Charles Helsley of the University of Hawaii (UH) combined efforts to receive funding from the National Sea Grant Office to determine and map potential offshore aquaculture sites within the waters of the main Hawaiian Islands, including identifying potential sites for offshore aquaculture parks. A team was assembled consisting of ADP, UH and the Coastal Zone Management Program (CZM) of the Department of Business,

Economic Development, and Tourism, which has considerable expertise in computerized Geographic Information Systems (GIS).

Funds of $95,000 were received and Phase I of the work is currently being completed. Objectives of Phase I included:

1) Review of the Phase I and II site characteristics of the HOARP project to develop a checklist of good site baseline characteristics.

2) Identify and review existing oceanographic, biological and ecological data from Federal, State, University and private sources, as well as determine existing and future commercial, military and recreational use patterns to anticipate and mitigate multiple use conflicts.

3) Gather and analyze information and put it into a computerized GIS and use the database to determine the best sites for offshore aquaculture farming.

4) Identify and evaluate Federal and State policies and regulatory regimes governing open ocean aquaculture development in Hawaii and formulate recommendations for changes that would streamline development.

Significant outputs from Phase I of the work include:

1) A global review of pertinent literature to describe factors that affect optimal location for offshore farming has been carried out and is being analyzed.

2) Sets of existing data for mapping purposes were gathered and are being standardized and inputted. Important physical characteristics of acceptable sites include sediment composition and current speed.

3) Analysis of policy options for Hawaii is underway based on the global literature review and the local experience with two State commercial lease applications.

Funding for Phase II of the work has been found through the State CZM Program. Efforts will continue to focus on creation of useful GIS maps of State marine waters around the main Hawaiian Islands and development of recommendations to improve State leasing policies and processes.

2.4 New Species Research

The future of offshore aquaculture expansion for Hawaii is dependent on development of mass hatchery techniques for a variety of economically important native species. Existing policy does not permit stocking exotic species offshore. Currently, native pearl oysters are available and the only fish species that makes

economic sense and is available in sufficient quantities is the Pacific threadfin or moi. But, the challenges to the control of the life cycle of marine fish species are formidable because of difficulties in spawning broodstock and the extremely small larvae that hatch. Providing sufficiently small and nutritious live and artificial feeds to newly hatched marine fish larvae is a major bottleneck to commercial development everywhere.

However, public and private sector researchers in Hawaii are actively pursuing development of new species, to illustrate:

1) The University of Hawaii, Hawaii Institute of Marine Biology (HIMB) is actively experimenting with the fisheries biology of the deep-water snappers ehu, onaga and opakapaka with support from the State and the UH Sea Grant College Program. Initial experiments to grow out larvae are promising on a laboratory scale.

2) The Oceanic Institute (OI), with federal and state funding, has been carrying out extensive hatchery work on several local ocean species. Building on their success in mass-producing moi fingerlings, OI scientists are producing limited quantities of stockable size amberack and other related jack species. (Ostrowski, 2001).

3) A new private company, Kona Blue Water Farms, Inc., recently received a three-year, $1.5M federal grant to develop a live feed system for marine fish larvae. The grant is from the Advanced Technology Program in the U.S. DOC, which provides monies to advance challenging research and development projects that have broad-based economic or social benefit. Targeted fish species include the mahimahi, deep-water snappers and a local grouper (PBN, 2001).

3.0 Status of Commercial Development

3.1 Initial Lease Applications

Passage of the amendments to Chapter 190D, HRS and the success of the HOARP project led to two companies entering the new and "uncharted" process to obtain a lease. These companies became the initial "test cases" for the State's ocean permitting and leasing processes. Both were active in the 1999 Legislative process to amend Chapter 190D, HRS, and both had complimentary business experiences that made them excellent candidates to be the "pioneers" to work out the details on how Chapter 190D, HRS, as amended, will be implemented. The companies were Cates International (CI) of Honolulu and Black Pearls, Inc. (BPI) of Kailua-Kona.

CI was formed to pursue open ocean commercial cage culture of fish in Hawaiian waters. The principals had considerable experience with commercial fishing, diving and boating services. CI personnel were an instrumental part of the team that carried out the highly successful HOARP project. CI decided to purchase similar cages from the same company, Net Systems of Brainbridge, Washington, to grow moi at a site near the HOARP site.

On April 10, 2000, CI submitted all Federal, State and County permits for a four-cage project using 28 acres of ocean two miles off Ewa Beach, Oahu. Processing began shortly after the submission on the key U.S. Army Corps of Engineers permit and the DLNR Conservation District Use Application (CDUA) permit. CI began the process, which included numerous meetings with community interests and State agencies, a public hearing and responding to comments on their Environmental Assessment. The company also had to deal with the filing of a contested case hearing with DLNR by several members of the native Hawaiian Community, who objected to the site chosen.

On March 9, 2001, approximately 12 months after the DLNR accepted the application, the Board of Land and Natural Resources (BLNR) authorized a lease. This was not only the first lease approved under the amended Chapter 190D, HRS, but is considered by Federal officials to be the first open ocean aquaculture lease in the nation (Sea Technology, 2001).

The second pioneering company, BPI is located at the Natural Energy Laboratory of Hawaii Authority (NELHA) in Kona. It is a cutting-edge research and development company that consults in pearl oyster hatchery development and develops commercial pearl farms around the world. Pearl oysters are grown using hanging culture techniques, where oysters seeded with pearl forming nuclei are hung in baskets from lines supported by buoys, and utilize natural ocean productivity as food.

Of particular interest to marine resource managers at DLNR, BPI's native cultured pearl oysters will naturally re-seed and increase depleted wild stocks of oysters, while they go through the lengthy pearl making cycle. As a public benefit of pearl farming, wild stocks of native black pearl oysters would increase over time in the general vicinity of a farm and eventually in the long term around the Islands. This species re-establishment occurs at no cost to the State.

On October 5, 2000, BPI submitted all its Federal, State and County permits for a 75 acre site in the borrow pit off the Reef Runway at the Honolulu International Airport. BPI likewise began the process which included numerous meetings with community interests and State Airport and agency officials, a public hearing, and responding to comments on the Environmental Assessment.

On August 24, 2001, approximately 11 months after DLNR accepted the application, a lease was authorized by BLNR. BPI thus became the second

lease authorized under the amended Chapter 190D, HRS. However, prior to execution of the lease, as a condition of the approval, a rule change is necessary to remove the 75 acre site from a State designated 700 acre Thrillcraft Area off the Airport. This process is currently underway by the DLNR's Division of Boating and Ocean Recreation and the thrill craft community.

3.2 New Interest in Leases

With the success of CI and BPI in obtaining leases, interest continues to grow from local, national and internationally based entities. Internationally, companies from several prominent nations in offshore aquaculture have indicated strong interest in the results of the Hawaii cage research, as well as the process for securing a commercial lease. Likewise nationally, at least one company has requested information on the process. Locally, several individuals have expressed interest, several companies are preparing applications and a community group in Waianae has carried out a feasibility study for community-based offshore aquaculture.

The local companies preparing applications, include a group in the early stages of considering cage culture of tuna (which has been demonstrated technically and economically feasible in Australia) and a newly established business Kona Blue Water Farms (KBWF) interested in finfish culture off the Big Island. KBWF

plans to initially raise mahimahi with a series of small-to-medium-size net pens. Hatchery techniques are well known for mahimahi.

The pens will be anchored in 150 feet to 200 feet of water to avoid exposure to high surf, minimize environmental impacts on coral reef and avoid conflict with fishing and recreational diving. If research is successful, at the Company's Kona-based marine finfish hatchery, other species such as the deep-water snappers, opakapaka and ehu, will be grown (Wedemeyer, 2001). As mentioned above, KBWF has received a $1.5M grant from the DOC to pursue this work.

For any future lease applications, DOA/ADP will continue to play the role of the facilitator and liaison between companies requesting leases and the regulatory agencies. DOA/ADP also assists companies in packaging permit applications. The Land Division of DLNR (LD/DLNR) is the responsible agency for determining environmentally acceptable resource uses and the conditions for granting the CDUA permit. LD/DLNR is also the agency that issues and administers the long-term ocean leases. Ultimately, BLNR decides on the issuance of the individual CDUA permit and lease on a project-by-project basis.

The U.S. Army Corps of Engineers' permitting process determines how and where cages can be anchored in State ocean waters from the Federal government perspective. Further the Corps currently is the main permitting agency for Federal marine waters.

4.0 Conclusions

Chapter 190D, HRS, was amended by the Legislature and signed into law in July of 1999, to allow Hawaii to examine open ocean aquaculture leasing and a great deal has happened in the ensuing two and one half years. Shortly after the changes were signed into law, a coalition of the University of Hawaii Sea Grant Program, the Oceanic Institute and the State ADP carried out a highly successful, multi-year cage culture demonstration project, HOARP, off Ewa Beach, Oahu. While this experiment was going on, two pioneering companies, Cates International and Black Pearls, Inc., came forward and submitted the first commercial lease applications under the new law, which they ultimately obtained in March and October, 2001, respectfully.

Though the newness of the ocean leasing concept caused some confusion and conflict in the permitting and leasing processes, DLNR has begun to clearly define the regulatory process to move aquaculture offshore in environmentally and economically sustainable ways. Moreover, projects are being carefully monitored so that the Legislature has the information to evaluate ocean leasing for aquaculture as a long-term opportunity for Hawaii.

This series of initiatives in local offshore aquaculture has pushed Hawaii to the forefront of U.S. efforts in national offshore aquaculture development. National

interest in encouraging aquaculture in State and Federal marine waters continues to build to increase domestically produced seafood supplies and hopefully the effort will be supported with new and increased funding support. By virtue of the cooperative and collaborative efforts of the State, University research, and private research and farming communities, Hawaii is well positioned to take advantage of this emerging sector of the U.S. aquaculture industry.

5.0 References

Cates, J.R., J.S. Corbin, J. Crawford, and C.E. Helsley, 2001. "Aquaculture: Beyond the Reef." Sea Technology, October, 2001.

Cicin-Sain, B., S. Bunsick, R. DeVoe, T. Eichenberg, J. Ewart, H. Halvorson, R. Knecht, and R. Rheault, 2001. Development of a Policy Framework for Offshore Marine Aquaculture in the 3-200 Mile U.S. Ocean Zone. Center for the Study of Marine Policy, University of Delware, 166 p.

Ostrowski, A.C., J. Bailey-Brock and P.S. Leung, 2001. "Hawaii Offshore Aquaculture Research Project (HOARP) Phase II, Final Report." The Oceanic Institute, August 31, 2001. 78 p.

Ostrowski, A.C., 2001. "Marine Finfish Research at Oceanic Institute. I Meeting the Challenges of the Future." The Advocate, October, 2001.

Pacific Business News, 2001. "Big Island aquaculture firm receives $1.5 million grant." October 19, 2001.

United States Department of Commerce, 1999. "U.S. Department of Commerce Aquaculture Policy." US DOC. 2 p.

Wedemeyer, S., 2001. "Offshore farms ready to make splash in Kona." West Hawaii Today, August 7, 2001.